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(11) **EP 1 061 251 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
20.06.2001 Bulletin 2001/25

(51) Int Cl.7: **F02M 37/22, F02M 25/00**

(43) Date of publication A2:  
20.12.2000 Bulletin 2000/51

(21) Application number: **00304866.7**

(22) Date of filing: **08.06.2000**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE**  
Designated Extension States:  
**AL LT LV MK RO SI**

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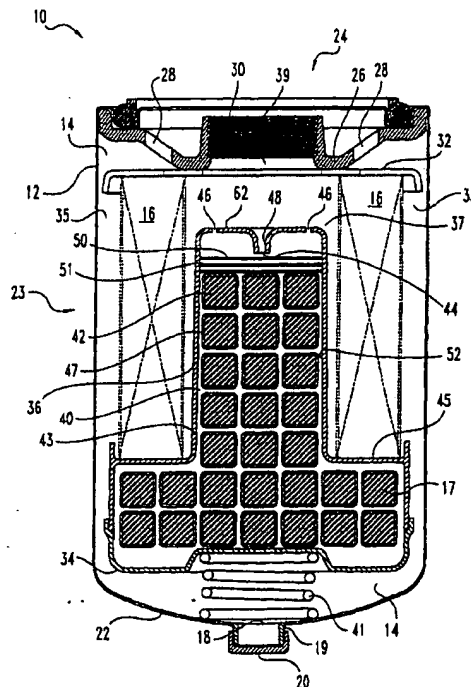
(30) Priority: **16.06.1999 US 333556**

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(54) **Fuel filter including slow release additive**

(57) The present invention relates generally to a fuel filter for use with internal combustion engines, for example, but not limited to diesel engines in commercial vehicles. The fuel filter includes a fuel additive that can be released into fuel. The rate of release for the fuel can be controlled. One embodiment of the fuel filter is illustrated in FIG. 1. The fuel additive (42) is provided in an inner chamber (40) and maintained in fluid communication with the fuel in the filter via an opening restricted by baffle plate(s) 50 and/or a diffusion orifice (44). In alternative embodiments, the opening into the inner chamber can be thermostatically controlled to limit fuel flow to the fuel additive. In alternative forms the fuel additive can be released at a substantially constant rate to maintain a uniform level of fuel additive in the fuel. Use of the present invention provides a fuel filter having an extended life span that is longer than fuel filters typically used with combustion engines.



**Fig. 1**

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# EUROPEAN SEARCH REPORT

Application Number  
EP 00 30 4866

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 5 766 449 A (DAVIS) 16 June 1998 (1998-06-16) * column 1, line 8 - line 16 * * column 5, line 38 - line 50 * * column 7, line 1 - line 9 * * column 8, line 20 - line 26 * * column 9, line 13 - line 34; figures 1,2 * ---	1-7, 9-12,14	F02M37/22 F02M25/00
Y	US 5 772 873 A (HUDGENS) 30 June 1998 (1998-06-30) * abstract * * column 3, line 55 - line 65 * * column 4, line 32 - line 40 * * column 4, line 59 - line 65 * * column 5, line 11 - line 13 * * column 5, line 26 - line 33 * * column 5, line 42 - line 55 * * column 5, line 60 - line 65 * * column 6, line 12 - line 29 * * column 6, line 54 - line 63 * * column 7, line 4 - line 7 * * column 7, line 22 - line 43 * * column 8, line 33 - line 52; figures 1-4 * ---	1-7, 9-12,14	TECHNICAL FIELDS SEARCHED (Int.Cl.7)  B01D F02M
A	US 5 690 814 A (HOLT) 25 November 1997 (1997-11-25) * column 1, line 12 - line 14 * * column 1, line 64 - column 2, line 2 * * column 3, line 18 - line 27; claim 1; figure 1 * --- -/--	1,2,9,14	
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>27 April 2001</b>	Examiner <b>Joris, J</b>
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons S : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03/92 (P4/C01)



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# EUROPEAN SEARCH REPORT

Application Number  
EP 00 30 4866

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 5 803 024 A (BROWN) 8 September 1998 (1998-09-08) * abstract * * column 1, line 6 - line 9 * * column 3, line 4 - line 10 * * column 4, line 30 - line 35 * * column 4, line 62 - column 5, line 3 * * column 5, line 53 - column 6, line 12 * * column 6, line 27 - line 37 * * column 6, line 47 - line 57; figures 1,8 *	1-3,5,6, 9,11,14	
A	US 4 075 097 A (PAUL) 21 February 1978 (1978-02-21) * abstract * * column 10, line 63 - column 11, line 29; figure 5 *	1,2,5,9, 11,14	
A	EP 0 501 851 A (FLEETGUARD) 2 September 1992 (1992-09-02) * abstract * * column 1, line 1 - line 10 *	1,2,9,14	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>27 April 2001</b>	Examiner <b>Joris, J</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

CPO FORM 1503 03 82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 30 4866

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
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27-04-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5766449 A	16-06-1998	US 5507942 A	16-04-1996
US 5772873 A	30-06-1998	US 5662799 A	02-09-1997
		AU 715072 B	13-01-2000
		AU 2616897 A	08-01-1998
		BR 9703642 A	11-08-1998
		CA 2208238 A	21-12-1997
		EP 0815916 A	07-01-1998
US 5690814 A	25-11-1997	NONE	
US 5803024 A	08-09-1998	AU 6986798 A	28-01-1999
		CA 2239442 A	18-01-1999
		EP 0891800 A	20-01-1999
		JP 11137918 A	25-05-1999
		US 5948248 A	07-09-1999
US 4075097 A	21-02-1978	AR 210596 A	31-08-1977
		AU 1150176 A	01-09-1977
		BE 840252 A	16-07-1976
		BR 7601996 A	05-10-1976
		CA 1062171 A	11-09-1979
		DE 2613481 A	14-10-1976
		ES 446589 A	16-06-1977
		FR 2306336 A	29-10-1976
		GB 1541051 A	21-02-1979
		JP 51121638 A	25-10-1976
		SE 7602670 A	28-10-1976
		US 4075098 A	21-02-1978
EP 501851 A	02-09-1992	FR 2673120 A	28-08-1992
		AT 108514 T	15-07-1994
		DE 69200233 D	18-08-1994
		DE 69200233 T	08-12-1994
		ES 2059192 T	01-11-1994
		US 5258118 A	02-11-1993

EPO FORM P0450

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82